



Nuclear Energy Overview: Idaho's contributions to nuclear power

1949 – The year it all began. After an exhaustive nationwide search, the Atomic Energy Commission selected a location in Idaho – a former Navy gunnery range – to be the site where the nation's best and brightest scientists and engineers could pursue the potential and promise of nuclear power.

And that pursuit moved quickly. At the newly established National Reactor Testing Station – the first reactor was designed, built, tested and ready for operations in short order. In fact, the pioneering Experimental Breeder Reactor-I in December of 1951 achieved the distinction of producing usable amounts of electricity from nuclear power for the first time in the world.

Over the subsequent quarter century, 51 other – mostly first-of-their-kind reactors – were designed and built in Idaho, including prototypes of the reactors used to power the Navy's nuclear submarines and aircraft carriers, and the reactor that powered an entire American city for the first time.

Today, the facility known as Idaho National Laboratory is being tasked by the Department of Energy to build on its remarkable legacy. DOE's stated vision for INL is to enhance the nation's energy security by becoming the pre-eminent, internationally-recognized nuclear energy research, development and demonstration laboratory within 10 years.

Realizing that vision requires broad-spectrum research on Generation IV nuclear power systems – such as the Very High Temperature Reactor, DOE's Advanced Fuel Cycle Initiative, the agency's Nuclear Hydrogen Initiative, space nuclear power, nuclear safety/licensing and regulatory issues, materials science, fundamental nuclear and radiological sciences and more.

The research is being guided by an unparalleled industry/academic team led by Battelle Memorial Institute – and including BWX Technologies, the Electric Power Research Institute, Washington Group International, and a national university consortium led by MIT.

This high-performing team leverages and plans for the strategic enhancement of the Idaho lab's unique physical assets – assets that are strategically distributed across three main campuses. These include the Science and Technology Campus, the Materials and Fuels Complex and the Reactor Technology Complex.



Signature facilities at the Reactor Technology Complex include the world's most capable test reactor – the Advanced Test Reactor, as well as the supporting Advanced Test Reactor Critical Facility, Hot Cell Facility, Radiation Measurements Laboratory, the Radiochemistry Laboratory, and the Safety and Tritium Applied Research Facility.

At the Materials and Fuels Complex, major facilities include the Hot Fuel Examination Facility, Fuel Conditioning Facility, the Fuel Manufacturing Facility, Zero Power Physics Reactor, the Fuel Assembly and Storage Building, and the new Space and Security Power Systems Facility.

The Science and Technology Campus is anchored by the INL Research Center and includes High Temperature Electrolysis and materials labs. Also within the Science and Technology Campus is the newly christened Center for Advanced Energy Studies, which will concentrate on preparing future researchers, designers, builders and operators of a revitalized nuclear power sector.

The center, inaugurated by Idaho's governor and the U.S. Secretary of Energy, has four key elements – the Center for Nuclear Fuels and Materials Research; the Center for Space Nuclear Research; the Center for Nuclear Systems Design and Analysis; and the Center for Advanced Modeling and Simulation.

The proud history – the mandate to lead a renaissance of nuclear power and science – unique facilities and respected researchers.

They're why today's Idaho National Laboratory is being directed to build on its legacy of nuclear leadership to assure a future of nuclear-enabled energy, national, environmental and economic security.